

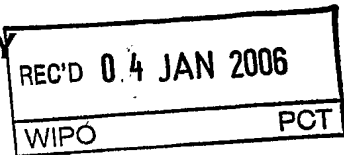
## PATENT COOPERATION TREATY


## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 347335/D21338	<b>FOR FURTHER ACTION</b> See Form PCT/PEA/416	
International application No. PCT/B2005/000488	International filing date (day/month/year) 10.02.2005	Priority date (day/month/year) 11.02.2004
International Patent Classification (IPC) or national classification and IPC C09D5/10, C09D201/10, C23F11/10, B05D1/02, B05D1/18		
Applicant DACRAL et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 6 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  16.08.2005	Date of completion of this report  03.01.2006	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Glomm, B  Telephone No. +49 89 2399-7158	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2005/000488

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-30 as originally filed

**Claims, Numbers**

1-24 received on 11.08.2005 with letter of 09.08.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2005/000488

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-24
Inventive step (IS)	Yes: Claims	
	No: Claims	1-24
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

Cited documents:

D1: WO 02/088262 A (DOW CORNING CORPORATION; CLERICI, VITTORIO; WILHELM, ALEXANDRA) 7 November 2002 (2002-11-07)

D2: EP-A-1 233 043 (METAL COATINGS INTERNATIONAL INC) 21 August 2002 (2002-08-21)

D3: US-A-3 817 905 (LERNER R,US ET AL) 18 June 1974 (1974-06-18)

**1. Novelty (Art. 33 (2) PCT)**

Each of cited documents D1 to D3 discloses an anticorrosion coating composition of metallic parts based on particulate metal in aqueous dispersion comprising (A) 0.3 to 24 % of an organic titanate and/or zirconate; (B) 10 to 40 % of a particulate metal or a mixture of particulate metals; (C) 1 to 25 % of a silane-based binder and (D) water as specified in detail in present independent main claim 1 (for relevant passages, see the corresponding International Search Report).

The attention of the applicant is drawn especially to the fact, that the parameter as specified in present independent main claim 1 in the last three lines (" ... with the condition .... "), appears to be implicitly disclosed by each of said documents D1 to D3 in view of the principles of the established official rules of practice. Implicit (or inherent) disclosure corresponds to the fact, that the claimed product is regarded as being anticipated actually by said prior art documents, even if the claimed parameter as specified in the said last three lines of present main claim 1 is not expressly mentioned therein, i.e., the parameter is regarded as being

actually present in the prior art embodiments, but simply not determined and/or mentioned expressly therein.

The considerations as provided in applicant's letter dated 09.08.2005 are not convincing for the following reasons in order items 1 to 5:

- 1.) As regards any discussion of process-related features and/or -advantages, the attention of the applicant is drawn to the fact, that present claim 1 is a (still very generally worded) product-claim, based on a "comprising"-wording, which does not exclude any further components or additives.
- 2.) Furthermore, for sake of completeness, even the addition of process-related features to such a product-related claim may not render such claim novel, unless the product as such is not anticipated.
- 3.) Features appearing only in dependent claims (or optional features of independent claims) will never render any claim novel.
- 4.) Discussion of any specific advantages and/or unexpected effects of the claimed subject matter as repeatedly done in applicant's said letter is a question of inventiveness only, and may also never render any claims novel.
- 5.) The disclosure of a prior art document is not to be limited unduly to the examples or preferred embodiments. Actually, the viewpoint of an average person skilled in the art when reading the whole document in its entirety is decisive.

Consequently, each of said documents D1 to D3 anticipates the subject matter of present claim 1.

The same considerations also relate to the additional features of the following claims 2 to 24 when taking into account the full disclosure of each of said

documents D1 to D3.

As regards the "product-by-process" wording of present claim 14, the attention of the applicant is drawn to the established practice, that mere addition of process-related features to a product-related claim may not render such claim novel, unless the product as such is not anticipated.

**Therefore the subject matter of present application is not new in view of the disclosure of each of said documents D1 to D3.**

## **2. Inventive Step (Art. 33 (3) PCT)**

Providing an amended main claim which meets the requirements of Art. 33 (2) PCT, the applicant should relate the distinguishing feature to a surprising (unexpected) technical effect or make credible or plausible that the distinguishing feature is not derivable from the prior art teaching (Art. 33 (3) PCT).

## **3. Miscellaneous**

The parameter as specified in present independent main claim 1 in the last three lines (" ... with the condition .... "), appear to attempt a definition of the subject matter to be protected by means of the corresponding results to be achieved, rather than by means of clear and unambiguous technical features, such violating the Art. 6 PCT. Furthermore, the said term represents not a clear and unambiguous technical feature, but a relative term having no clear and unambiguous meaning among the average persons skilled in the art. The applicant therefore is invited to replace said objected term by clear and

unambiguous technical features based on suitable subclaims or relevant passages taken from the present description.

Present application includes totally 5 independent claims, i.e., 1, 14, 17, 18 and 24, respectively. The attention of the applicant is drawn to the established official practice, that an application generally should not contain more than one independent claim in a particular category. Consequently, the present set of claims will lead to a refusal of the application in the subsequent, European regional stage, if any.

In order to improve the understanding and legibility of the application, in the European regional phase, if any, the applicant is invited to identify the documents D1 to D3 in the description additionally and briefly discuss the relevant background art disclosed therein.

When filing amendments, any undue extension of the scope of the application should be avoided.

- 28 -

## Claims

5 1. Anticorrosion coating composition of metallic parts based on particulate metal in aqueous dispersion comprising, in the following proportions (percentages by mass):

- an organic titanate and/or zirconate : 0.3 to 24%;

10 - a particulate metal or a mixture of particulate metals : 10 to 40%;

- a silane-based binder : 1 to 25%;

- water : q.s.p. 100%;

15 wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

20 2. Composition according to Claim 1, characterized in that the organic titanate is chosen from the group constituted by the titanates compatible in organic phase and the titanates compatible in aqueous phase and the organic zirconate is chosen from the group constituted by the zirconates compatible in organic phase and the zirconates compatible in aqueous phase.

25 3. Composition according to Claim 2, characterized in that the titanates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanates, advantageously chosen from the group comprising tetraethyl titanate, tetra-n-butyl titanate and octylene glycol titanate, and the zirconates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconates, advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.

35 4. Composition according to Claim 2, characterized in that the titanates compatible in aqueous phase are chelated organic titanates, advantageously chosen from the group constituted by triethanolamine titanates, and



the zirconates compatible in aqueous phase are chelated organic zirconates, advantageously the triethanolamine zirconates.

- 5 5. Composition according to any one of the preceding claims, characterized in that the particulate metal is chosen from zinc and aluminium, as well as their alloys and their mixtures or their alloys with manganese, magnesium, tin or Galfan.
- 10
6. Composition according to any one of the preceding claims, characterized in that the silane-based binder comprises a silane carrying at least one hydrolysable function in hydroxyl function chosen from a C<sub>1</sub>-C<sub>4</sub> alkoxy
- 15 radical.
7. Composition according to any one of the preceding claims, characterized in that the silane additionally carries an epoxy function.
- 20
8. Composition according to Claim 7, characterized in that the silane is chosen from di- or trimethoxysilane with an epoxy function or di- or triethoxysilane with an epoxy function, as well as their mixtures, in
- 25 particular gamma-glycidoxypropyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.
9. Composition according to any one of the preceding claims, characterized in that it additionally comprises
- 30 1 to 30% by weight of organic solvent or of a mixture of organic solvents, with respect to the total weight of the composition.
10. Composition according to Claim 9, characterized in
- 35 that the organic solvent is chosen from the group constituted by the glycolic solvents such as the glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, polypropylene glycol, nitropropane, the

- 30 -

alcohols, the ketones, propylene glycol methyl ether, 2,2,4-trimethyl-1,3-pentanediol isobutyrate (texanol), white spirit, as well as their mixtures.

5 11. Composition according to any one of the preceding claims, characterized in that it additionally comprises 0.1 to 7% by weight of molybdenum oxide, with respect to the total weight of the composition.

10 12. Composition according to any one of the preceding claims, characterized in that it additionally comprises 0.5 to 10% by weight, with respect to the total weight of the composition, of a reinforcing agent of the anticorrosion properties chosen from the group  
15 constituted by yttrium, zirconium, lanthanum, cerium, praseodymium, in the form of oxides or of salts, advantageously yttrium oxide  $Y_2O_3$ , or 0.2 to 4% by weight, with respect to the total weight of the composition, of a corrosion inhibitor pigment such as  
20 aluminium triphosphate.

13. Composition according to any one of the preceding claims, characterized in that it additionally comprises a thickening agent, advantageously 0.005 to 7% by  
25 weight with respect to the total weight of the composition, and/or a wetting agent, advantageously 0.1 to 4% by weight with respect to the total weight of the composition.

30 14. Anticorrosion coating of metallic parts, characterized in that it is obtained from a coating composition according to one of claims 1 to 13, by spraying, soaking-draining or soaking-centrifugation, the coating layer then being subjected to a baking  
35 operation by supply of thermal energy, such as by convection, infrared or induction, preferably carried out at a temperature of between 180°C and 350°C, for approximately 10 to 60 minutes by convection or infrared, or for 30 seconds to 5 minutes by induction.

- 31 -

15. Anticorrosion coating of metallic parts according to Claim 14, characterized in that, prior to a baking operation, the coated metallic parts are subjected to a drying operation by supply of thermal energy, such as by convection, infrared or induction, especially at a temperature of between 30 and 250°C by convection or approximately 10 to 30 minutes on line or by induction for 30 seconds to 5 minutes.

10

16. Anticorrosion coating of metallic parts according to one of Claims 14 or 15, characterized in that it is applied to the metallic parts to be protected, with a thickness of the dry film of between 3  $\mu\text{m}$  (11  $\text{g}/\text{m}^2$ ) and 30  $\mu\text{m}$  (110  $\text{g}/\text{m}^2$ ) and preferably between 4  $\mu\text{m}$  (15  $\text{g}/\text{m}^2$ ) and 12  $\mu\text{m}$  (45  $\text{g}/\text{m}^2$ ), more particularly between 5  $\mu\text{m}$  (18  $\text{g}/\text{m}^2$ ) and 10  $\mu\text{m}$  (40  $\text{g}/\text{m}^2$ ).

17. Metallic substrate, preferably of steel or of zinc-coated steel or of a base layer of zinc deposited by different methods of application including mechanical deposition, of cast-iron or of aluminium, provided with an anticorrosion coating according to one of Claims 14 to 16.

25

18. Aqueous composition of  $\text{C}_1\text{-C}_8$  tetraalkyl titanate, intended for the preparation of a coating composition for a metallic substrate in aqueous dispersion, prepared from a water-soluble organic solvent, from a binder containing a silane carrying at least one hydrolysable function in hydroxyl function, from a titanate or zirconate compatible in organic phase and from water, in the following proportions (percentages by mass):

- 35
- water-soluble organic solvent : 0 to 20%
  - silane-based binder : 20 to 50%
  - $\text{C}_1\text{-C}_8$  tetraalkyl titanate and/or zirconate : 5 to 25%
  - water : qsp 100%.

- 32 -

19. Composition according to Claim 18, characterized in that the water-soluble organic solvent is chosen from the group constituted by the glycolic solvents such as the glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, propylene glycol methyl ether, the alcohols, the ketones, as well as their mixtures.
20. Composition according to either one of Claims 18 and 19, characterized in that the binder comprises a silane carrying at least one hydrolysable function in hydroxyl function chosen from a  $C_1$ - $C_4$  alkoxy radical.
21. Composition according to any one of Claims 18 to 20, characterized in that the silane additionally carries an epoxy function.
22. Composition according to Claim 21, characterized in that the silane is chosen from di- or trimethoxysilane with an epoxy function and di- or triethoxysilane with an epoxy function, as well as their mixtures, in particular gamma-glycidoxy-propyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane.
23. Composition according to any one of Claims 18 to 22, characterized in that the  $C_1$ - $C_8$  tetraalkyl titanate is advantageously chosen from the group comprising tetraethyl titanate, tetra-n-butyl titanate and octylene glycol titanate, and the  $C_1$ - $C_8$  tetraalkyl zirconate is advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.
24. Use of the composition according to any one of Claims 18 to 23, in pretreatment for adhesives or coatings, in posttreatment as a sealer based on metallic particles, in passivation treatment for

- 33 -

substrates based on steel, zinc, aluminium or steel covered with a zinc-based coating, or in an additive for improving the adhesion of coatings or adhesives in aqueous phase.